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EXAMINER

KADING, JOSHUA A

ART UNIT	PAPER NUMBER
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2661

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DATE MAILED: 04/27/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/659,106

Applicant(s)

EBERLE ET AL.

Examiner

Joshua Kading

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 February 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-33 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8, 11-13, 18-23 and 25-31 is/are rejected.
- 7) ☒ Claim(s) 14-17, 24, and 32-33 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 February 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 102

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

5

Claims 1, 8, and 26-31 are rejected under 35 U.S.C. 102(b) as being anticipated by Kristol et al.

10 In regard to claim 1, Kristol et al. disclose "a method of multicasting, comprising:
sending multicast information from a source to a plurality of targets (figure 7,
element 710 where $E_{i,j}$ indicates a plurality of targets);

sending respective acknowledgements from each of the targets, indicating
receipt of the multicast information (figure 7, element 720 where the status sent is the
acknowledgement as can be read in col. 10, line 42);

15 merging the respective acknowledgements into a merged acknowledgement
(figure 7, element 730 where the consolidated status is the merged acknowledgement),
wherein the merged acknowledgement indicates which of the plurality of targets
received the multicast information (col. 9, lines 39-47 where as in step 710 the $E_{i,j}$'s
indicate a plurality of targets and as read in col. 10, line 42 the status message is an
20 acknowledgement message);

and supplying the merged acknowledgement to the source (figure 7, element 730
where the consolidated status or acknowledgement is sent to the source)."

In regard to claim 8, Kristol et al. disclose "the method as recited in claim 1 wherein the merged acknowledgement is formed by logically combining the respective acknowledgements (col. 9, lines 66-67 and col. 10, line 1 where the LOB's come from
5 each target and a logical bitwise AND is performed on all of them to obtain the LOB_{consolidated})."

In regard to claim 26, Kristol et al. disclose "an apparatus for transmitting information between an initiator node and a plurality of target nodes, comprising:

10 means for multicasting information to a plurality of the target nodes from the initiator node (col. 9, lines 36-37); and

means for combining received acknowledgements indicating whether the multicast information was successfully received, into a combined acknowledgement that indicates those of the plurality of target nodes that acknowledged successful receipt of
15 the multicast information and returning the combined acknowledgement to the initiator node (col. 9, lines 39-53 and col. 10, lines 21-24 where as in step 710 the E_{ij}'s indicate a plurality of targets and as read in col. 10, line 42 the status message is an acknowledgement message; figure 7, element 730 where the consolidated status or acknowledgement is sent to the source)."

20
Regarding claim 27, Kristol discloses "a network node comprising:

a plurality of ports to receive and to transmit multicast information (figure 3, element 304 has a plurality of ports to transmit and receive multicast information as is described in col. 2, lines 31-39); and

multicast acknowledgement merging logic coupled with the plurality of ports, the
5 logic to generate a merged multicast acknowledgement that indicates acknowledging target nodes of a multicast (figure 7, element 730 where the consolidated status is the merged acknowledgement and the merging must be done by logic coupled to the ports; col. 9, lines 39-47 where as in step 710 the $E_{i,j}$'s indicate a plurality of targets and as read in col. 10, line 42 the status message is an acknowledgement message)."

10

Regarding claim 28, Kristol discloses "the network node of claim 27, wherein the network node includes one or more of a router, switch, and a bridge (col. 4, lines 34-38)."

15

Regarding claim 29, Kristol discloses "the network node of claim 27, wherein indication of the acknowledging target nodes comprises indicating those of the plurality of ports that correspond to acknowledging target nodes (col. 9, lines 39-47 where as in step 710 the $E_{i,j}$'s indicate a plurality of targets and as read in col. 10, line 42 the status message is an acknowledgement message sent to the source node and as can be read
20 in col. 7, lines 49-61 each node contains information indicating which node (thus which port) has acknowledged the multicast message)."

Regarding claim 30, Kristol discloses "the network node of claim 27, wherein indication of the acknowledging target nodes comprises identifying the acknowledging target nodes (col. 9, lines 39-47 where as in step 710 the $E_{i,j}$'s indicate a plurality of targets and as read in col. 10, line 42 the status message is an acknowledgement message sent to the source node and as can be read in col. 7, lines 49-61 each node contains information indicating which node (thus which port) has acknowledged the multicast message)."

Regarding claim 31, Kristol discloses "the node of claim 27 further comprising the multicast acknowledgement merging logic to merge multicast acknowledgements to indicate whether a multicast was successful (figure 7, element 730 where the consolidated status is the merged acknowledgement and the merging must be done by logic; col. 9, lines 39-47 where as in step 710 the $E_{i,j}$'s indicate a plurality of targets and as read in col. 10, line 42 the status message is an acknowledgement message and as is known in the art (and specified by applicant) an acknowledgement is an indication the multicast was successful)."

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 2-5, and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kristol et al. in view of Crocker et al. (U.S. Patent 5,502,756).

In regard to claim 2, Kristol et al. disclose the method as recited in claim 1.

5 However, Kristol et al. lack "the multicast information is sent across a switch to a plurality of targets." Crocker et al. however, disclose "the multicast information is sent across a switch to a plurality of targets (figure 1, element 20 where the local exchange switch of Crocker is used as the Local Exchange of Kristol)." It would have been
10 exchange switch with the method of claim 1 for the purpose of routing the combined acknowledgement messages to the appropriate destination. The motivation being efficient routing of information from targets to sources and vice versa.

In regard to claim 3, Kristol et al. and Crocker et al. disclose the method as
15 recited in claim 2. However, Crocker et al. lack "the respective acknowledgements are sent from the respective targets to the switch." Kristol et al. however, further disclose "the respective acknowledgements are sent from the respective targets to the switch (figure 7, element 720 where each target E_{ij} sends an acknowledgement to L_i the local exchange switch of claim 2)." It would have been obvious to one with ordinary skill in the
20 art at the time of invention to send the target acknowledgements to the switch for the same reasons and motivation as in claim 2.

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In regard to claim 4, Kristol et al. and Crocker et al. disclose the method as recited in claim 3. However, Crocker et al. lack "the switch merges the respective acknowledgements and forwards the merged acknowledgement to the source." Kristol et al. however, further disclose "the switch merges the respective acknowledgements and forwards the merged acknowledgement to the source (figure 7, element 730 where again the L_i is the local exchange switch of Crocker)." It would have been obvious to one with ordinary skill in the art at the time of invention to have the switch merge the acknowledgements into one merged acknowledgement for the same reasons and motivation as in claim 3.

10

In regard to claim 5, Kristol et al. and Crocker et al. disclose the method as recited in claim 4. However, Crocker et al. lack "the acknowledgements are supplied in an acknowledgement packet encoding an identity of the acknowledging target." Kristol et al. however, further disclose "the acknowledgements are supplied in an acknowledgement packet encoding an identity of the acknowledging target (figure 6, element 620 which is an acknowledgement packet as can be read in col. 9, lines 39-42 and col. 6, lines 15-20, and field LEPI where LEPI is defined as a local endpoint identifier which is used to identify a target)." It would have been obvious to one with ordinary skill in the art at the time of invention to include the target identifier in the acknowledgement packet for the purpose of knowing who the acknowledgment message came from. The motivation being proper identification of targets that have received information.

15

20

In regard to claim 7, Kristol et al. and Crocker et al. disclose the method as recited in claim 3. However, Crocker et al. lack "the switch is a network switch coupling a plurality of sources and a plurality of targets in a network." Kristol et al. however, 5 further disclose "the switch is a network switch coupling a plurality of sources and a plurality of targets in a network (figure 3 where elements 302 are hosts which can be sources and targets as a host can send and receive data making it both a target and a source, and element 304 is the local exchange switch of Crocker coupling the sources and targets through network 310)." It would have been obvious to one with ordinary skill 10 in the art at the time of invention to connect a plurality of hosts and a plurality of targets with a switch for the same reasons and motivation as in claim 3.

Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kristol et al. in view of Bartfai et al. (U.S. Patent 6,067,567).

15 Regarding claim 11, Kristol discloses "a method comprising:
sending multicast information from a source to a plurality of targets (figure 7, element 710 where E_{ij} indicates a plurality of targets);
sending respective acknowledgements from each of the targets, indicating receipt of the multicast information (figure 7, element 720 where the status sent is the 20 acknowledgement as can be read in col. 10, line 42);

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merging the respective acknowledgements into a merged acknowledgement (figure 7, element 730 where the consolidated status is the merged acknowledgement)...

and supplying the merged acknowledgement to the source (figure 7, element 730
5 where the consolidated status or acknowledgement is sent to the source)."

However, Kristol lacks what Bartfai discloses, that is "wherein the merged acknowledgement includes a single bit indicating whether all of the targets successfully received the multicast information (col. 6, lines 41-48; it is noted that although the acknowledgement service packet is not necessarily a single bit, as stated in applicant's
10 specification on page 8, lines 1-2, the acknowledgement bit can be an acknowledgement packet conveying the same information as the single bit)."

It would have been obvious to one with ordinary skill in the art at the time of invention to include the single acknowledgement bit (or packet) with the rest of the method for the purpose of indicating that all of the nodes have received the multicast
15 message. The motivation being that this insures a reliable and verifiable distribution of messages (Bartfai, col. 7, lines 1-4).

Claims 6, 12, 13, 20-23, and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kristol et al. and Crocker et al., and further in view of applicant's
20 admitted prior art (AAPA).

In regard to claim 6, Kristol et al. and Crocker et al. disclose the method as recited in claim 3. However, Kristol et al. and Crocker et al. lack "the switch is a synchronous switch and all acknowledgements are received by the switch at the same time." AAPA however, discloses "the switch is a synchronous switch and all
5 acknowledgements are received by the switch at the same time (specification, page 2, lines 1-5 where this is saying that the switch is a synchronous switch and receives the acknowledgements at the same time)." It would have been obvious to one with ordinary skill in the art at the time of invention to include the synchronous switch with the method of claim 3 for the purpose of sending or receiving information at the same time. The
10 motivation for this being efficiency.

In regard to claim 12, Kristol et al. disclose "a networked system comprising:
a sending node (col. 9, line 36 where S is the source or sending node);
a plurality of receiving nodes coupled to...receive multicast information sent from
15 the sending node during a multicast operation and coupled to provide
acknowledgements indicating whether the multicast information was successfully
received (col. 9, lines 36-42 where all E's are the receiving nodes and their status
messages are the acknowledgment messages);
a...medium coupled to supply the multicast information to the respective
20 receiving nodes...and to receive and combine the respective acknowledgements into a
combined acknowledgement that indicates which of the plurality of receiving nodes
acknowledged receipt of the multicast information, wherein the merged

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acknowledgement is supplied to the sending node (col. 9, lines 39-53 and col. 10, lines 21-24 where L is the coupled medium and where as in step 710 the E_{ij} 's indicate a plurality of targets and as read in col. 10, line 42 the status message is an acknowledgement message sent to the source (sending) node)."

5 However, Kristol et al. lack "...simultaneously..." sending and receiving information from the receiving and sending nodes and "a switching medium coupled to supply the multicast information..." Crocker et al. however, disclose "a switching medium coupled to supply the multicast information...(figure 1, element 20 where the local exchange switch of Crocker is used as the Local Exchange of Kristol)." It would
10 have been obvious to one with ordinary skill in the art at the time of invention to include the local exchange switch with the multicast network for the purpose of routing the information to the correct destination. The motivation for this being efficient data transmission.

 AAPA discloses "...simultaneously..." sending and receiving information from the
15 receiving and sending nodes (specification, page 2, lines 1-5 where this is saying that the switch is a synchronous switch and receives the acknowledgements at the same time)." It would have been obvious to one with ordinary skill in the art at the time of invention to include the simultaneous sending and receiving with the multicast network for the purpose of sending or receiving information at the same time. The motivation for
20 this being efficiency.

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In regard to claim 13, Kristol et al., Crocker et al., and AAPA disclose the networked system of claim 12. However, Crocker et al., and AAPA lack "the networked system includes a switched data network and the switching medium is a network."

Kristol et al. however, further disclose "the networked system includes a switched data
5 network and the switching medium is a network (figure 3 where elements 302 are hosts which can be sources and targets as a host can send and receive data making it both a target and a source, and element 304 is the local exchange switch of Crocker coupling the sources and targets through network 310)." It would have been obvious to one with
ordinary skill in the art at the time of invention to include the switched data network with
10 the network of claim 12 for the same reasons and motivation as claim 12.

In regard to claim 21, Kristol et al., Crocker et al., and AAPA disclose the networked system of claim 12. However, Crocker et al. and AAPA lack "the switching medium combines the acknowledgements in response to information in each
15 acknowledgement packet that indicates a multicast acknowledgement is being sent."
Kristol et al. however, further disclose "the switching medium combines the acknowledgements in response to information in each acknowledgement packet that indicates a multicast acknowledgement is being sent (figure 6, element 620 which is an acknowledgement packet as can be read in col. 9, lines 39-42 and col. 6, lines 15-20,
20 and field LEPI where LEPI is defined as a local endpoint identifier which is used to identify a target and the Type field identifies what type of packet it is; col. 9, line 43 states that only the status type messages or acknowledgement type messages are

combined, these messages are identified by their Type field)." It would have been obvious to one with ordinary skill in the art at the time of invention to include the combining acknowledgements in response to information received with the network of claim 12 for the same reasons and motivation as in claim 12.

5

In regard to claim 22, Kristol et al., Crocker et al., and AAPA disclose the networked system of claim 12. However, Crocker et al. and AAPA lack "the acknowledgements...are destined for the same source." Kristol et al. however, further disclose "the acknowledgements...are destined for the same source (col. 9, lines 47
10 where the source S is the only source therefore all acknowledgment messages are going to the same source)." It would have been obvious to one with ordinary skill in the art at the time of invention to include the destined for the same source with the network of claim 12 for the same reasons and motivation as in claim 12.

15

Regarding claim 23, Kristol, Crocker, and AAPA disclose the networked system of claim 12. However, Crocker and AAPA lack what Kristol further discloses, that is "the switching medium combines the acknowledgements in response to having scheduled a multicast data transfer (figure 7, where the combining of acknowledgements in step 730
is in response to acknowledgements from each target node of a multicast message
20 transfer in step 710)." It would have been obvious to one with ordinary skill in the art at the time of invention to include the combining acknowledgements in response to a

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multicast data transfer with the system of claim 12 for the same reasons and motivation as in claim 12.

In regard to claim 25, Kristol et al., Crocker et al., and AAPA disclose the networked system of claim 12. However, Crocker et al. and AAPA lack "the networked system includes a plurality of hosts, each of the hosts includes both a sending node and a receiving node coupled to the switching medium." Kristol et al. however, further disclose "the networked system includes a plurality of hosts, each of the hosts includes both a sending node and a receiving node coupled to the switching medium (figure 3, element 302 is a plurality of hosts, and each of these hosts is connected to the switching medium 304; further it is taken that each of these hosts must have a receiving and sending node in order to communicate with each other)." It would have been obvious to one with ordinary skill in the art at the time of invention to include the plurality of hosts with the network of claim 12 for the same reasons and motivation as in claim 12.

Claims 18, 19, and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kristol et al., Crocker et al., and AAPA, and further in view of Bartfai et al.

Regarding claim 18, Kristol, Crocker, and AAPA disclose the networked system of claim 12. However, Kristol, Crocker, and AAPA lack what Bartfai discloses, that is

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"the acknowledgements from the plurality of target nodes are provided to the switching medium at a fixed time relative to the sending of the multicast information (col. 6, lines 51-54 whereby expecting the acknowledgements in a given amount of time is having them provided at a fixed time relative to sending)." It would have been obvious to one

5 with ordinary skill in the art at the time of invention to include the fixed time interval with the networked system of claim 12 for the purpose of giving a finite time period for the nodes to respond. The motivation being that resources will not be wasted on waiting for an acknowledgement that is never coming.

10 Regarding claim 19, Kristol, Crocker, AAPA, and Bartfai disclose the networked system of claim 18. However, Kristol, Crocker, and AAPA lack what Bartfai further discloses, that is "the combined acknowledgement is provided to the source node at a fixed time relative to the sending of the multicast information (col. 6, lines 51-54 whereby expecting the acknowledgements in a given amount of time is having them

15 provided at a fixed time relative to sending; where it is noted that concept of a timed interval for acknowledgements is well known in the art and Bartfai is describing generally a timed interval situation for nodes in a system)." It would have been obvious to one with ordinary skill in the art at the time of invention to include the timed interval with the system of claim 18 for the same reasons and motivation as in claim 18.

20

 Regarding claim 20, Kristol discloses " a networked system comprising:
a sending node (col. 9, line 36 where S is the source or sending node);

a plurality of receiving nodes coupled to...receive multicast information sent from the sending node during a multicast operation and coupled to provide acknowledgements indicating whether the multicast information was successfully received (col. 9, lines 36-42 where all E's are the receiving nodes and their status messages are the acknowledgment messages);

a...medium coupled to supply the multicast information to the respective receiving nodes...and to receive and combine the respective acknowledgements into a combined acknowledgement that indicates which of the plurality of receiving nodes acknowledged receipt of the multicast information, wherein the merged acknowledgement is supplied to the sending node (col. 9, lines 39-53 and col. 10, lines 21-24 where L is the coupled medium and where as in step 710 the $E_{i,j}$'s indicate a plurality of targets and as read in col. 10, line 42 the status message is an acknowledgement message sent to the source (sending) node)."

However, Kristol et al. lack "...simultaneously..." sending and receiving information from the receiving and sending nodes and "a switching medium coupled to supply the multicast information..." Crocker et al. however, disclose "a switching medium coupled to supply the multicast information... (figure 1, element 20 where the local exchange switch of Crocker is used as the Local Exchange of Kristol)." It would have been obvious to one with ordinary skill in the art at the time of invention to include the local exchange switch with the multicast network for the purpose of routing the information to the correct destination. The motivation for this being efficient data transmission.

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AAPA discloses "...simultaneously..." sending and receiving information from the receiving and sending nodes (specification, page 2, lines 1-5 where this is saying that the switch is a synchronous switch and receives the acknowledgements at the same time)." It would have been obvious to one with ordinary skill in the art at the time of invention to include the simultaneous sending and receiving with the multicast network for the purpose of sending or receiving information at the same time. The motivation for this being efficiency.

Lastly, Kristol, Crocker, and AAPA lack what Bartfai discloses, that is "the networked system is pipelined (figure 2, where each node level represents a different stage of the pipeline, i.e. primary node is at the first stage, the distribution nodes are at the second stage, etc.)." It would have been obvious to one with ordinary skill in the art at the time of invention to include the pipelined network with the rest of the system for the purpose of allowing the intermediate stages (nodes) to share in the work of the primary node. The motivation being that this allows resources to be freed up at the primary node and increases efficiency (Bartfai, col. 2, lines 60-64).

Allowable Subject Matter

Claims 14-17, 24, 32, and 33 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

The objection to the drawings has been withdrawn.

Applicant's arguments filed 18 February 2004 have been fully considered but they are not persuasive.

5 Applicant argues that Kristol alone or in combination does not teach or suggest "merging the respective acknowledgements into a merged acknowledgement, wherein the merged acknowledgement indicates which of the plurality of targets received the multicast information." Examiner respectfully disagrees. As stated in the above rejections, Kristol does indeed teach that the acknowledgement indicates which of the
10 targets received (as well as did not receive) the multicast information.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joshua Kading whose telephone number is (703) 305-0342. The examiner can normally be reached on M-F: 8:30AM-5PM.

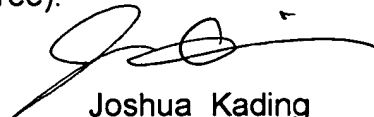
15 If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Douglas Olms can be reached on (703) 305-4703. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished applications is available through Private PAIR only.

- 5 For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Joshua Kading
Examiner
Art Unit 2661

10 April 21, 2004



KENNETH VANDERPUYE
PRIMARY EXAMINER

KENNETH VANDERPUYE
PRIMARY EXAMINER